3.3.5 NTS Alternative

This alternative would involve housing the TA-18 operational capabilities and materials associated with security Category I/II activities in and around the existing DAF at NTS. For this purpose, DAF would be modified internally to accommodate the critical assembly machines, control rooms, and SNM vaults, and two new buildings would be constructed external to the DAF security perimeter. The two new buildings would be a "low-scatter" facility to house emergency response activities with minimal reflection and a new administration building to accommodate a DAF Central Command Station and increased staffing associated with the TA-18 security Category I/II missions (NTS 2001). Under this alternative, a portion of the security Category III/IV activities (the SHEBA activities) would either be relocated to a new structure at LANL's TA-39 or remain at TA-18. The rest of the security Category III/IV activities would remain at TA-18. The relocation of SHEBA and other security Category III/IV activities to new structures at LANL is discussed in Section 5.6.

3.3.5.1 Facilities

Device Assembly Facility

DAF is a 9,290-square-meter (100,000-square-foot) nuclear explosive facility within a 12-hectare (29-acre) high-security area, located in Area 6 of DOE's NTS (see **Figure 3–9**). Construction on DAF began in the mid-1980s, when nuclear weapons testing was still in progress. DAF's original purpose was to consolidate all nuclear explosive assembly functions and to provide safe structures for high-explosive and nuclear explosive assembly operations, as well as a state-of-the-art safeguards and security environment.

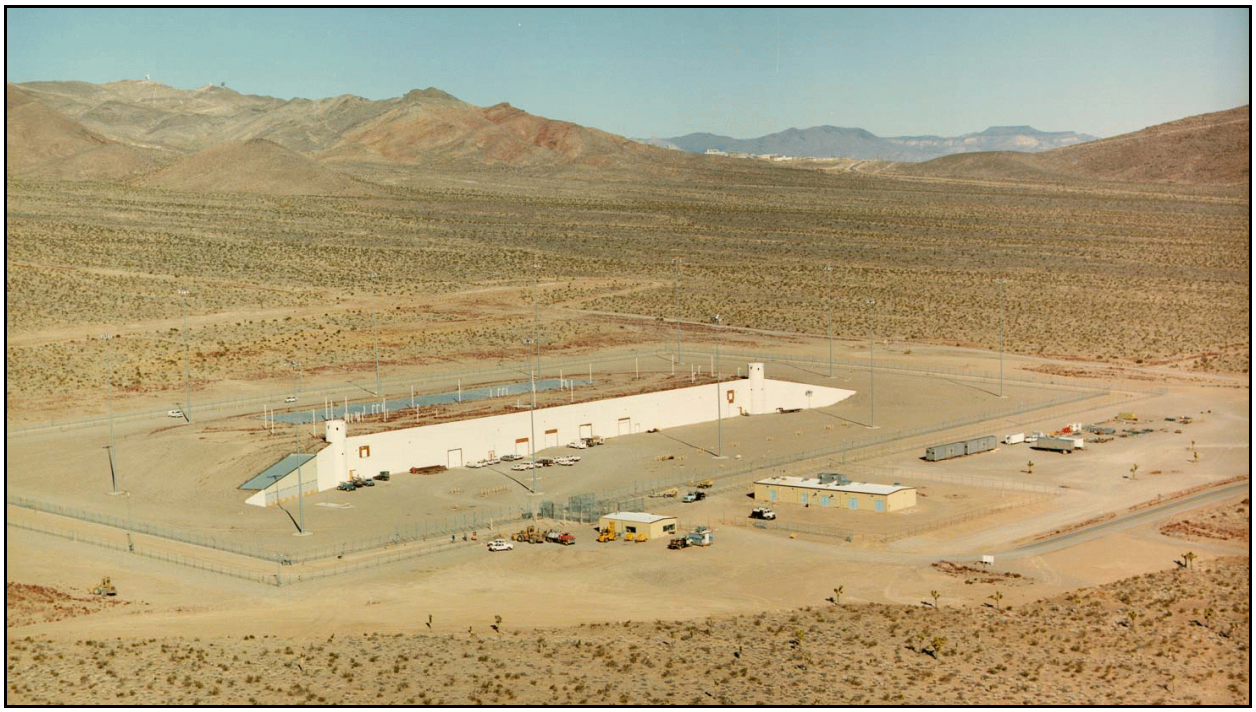

Figure 3–9 DAF at NTS

DAF has five assembly cells, four high bays, three assembly bays, two radiography bays, five staging bays, a component testing laboratory, two shipping and receiving buildings, two decontamination facilities, three small vaults, an administration building, alarm stations, an entry guard station, and a mechanical and electrical support building (see **Figure 3–10**).

The main facility is covered with a minimum of 1.5 meters (5 feet) of earth. The major operating facilities, assembly cells and high bays, radiography bays, and shipping and receiving building have bridge cranes. Each assembly cell is designed and tested to undergo an explosion from a maximum high-explosive device without injury to personnel in an adjacent blast-protected area outside of the cell. Gravel covers are designed to minimize release of nuclear material in the unlikely event of an accidental explosion.

One face of DAF is exposed and opens onto the area enclosed within a PIDAS security fence. DAF has a comprehensive security system designed into the structure.

The TA-18 security Category I/II operational activities would occur in the west side of Building 400. The building east of Building 400 is currently nonoperational and kept in "ready-reserve" status. The current missions in this building would be relocated to the east side of the building. **Figures 3–11** and **3–12** show the proposed changes to accommodate the TA-18 activities.

The Building 370 corridor would remain in its present configuration with no equipment located within the corridor. The corridor is an unoccupied area, with administratively controlled access during normal operations.

A DAF Central Control Station would be placed in Building 400, allowing a readout of building status; fire and radiation alarm annunciation; weather reports on lightning; intercom and closed-circuit television control; and status of the individual heating, ventilating, and air conditioning systems.

Modifications inside DAF would include:

- Local modifications to internal walls, floors, and ceilings
- Local additions of bulk and penetration-shielding materials
- Local demolition of fire-suppression and other water systems
- Removal of polar cranes from assembly cells
- Raceway additions connecting the critical assemblies to their control rooms and power supplies
- Implementation of a DAF Central Control Station
- A new line-of-sight corridor internal to DAF

Buildings 302, 310, 332, and 352 would be used to house the critical assembly machines and associated control areas. Buildings 492 and 494 would be used for SNM storage.

New Low-Scatter Building

Because DAF is designed for blast protection, the buildings are constructed using massive concrete and steel surrounded by earthen fill. This is not compatible with one TA-18 activity that requires low reflectance from the surrounding walls, ceiling, and floor. The only acceptable way to meet this requirement would be to place this activity outside of DAF in a new "thin-skin," or "low-scatter," building. This low-scatter building would consist of a thin metal building and basement to prevent floor and wall radiation scatter. The low-scatter building would be placed in a location outside the DAF PIDAS.

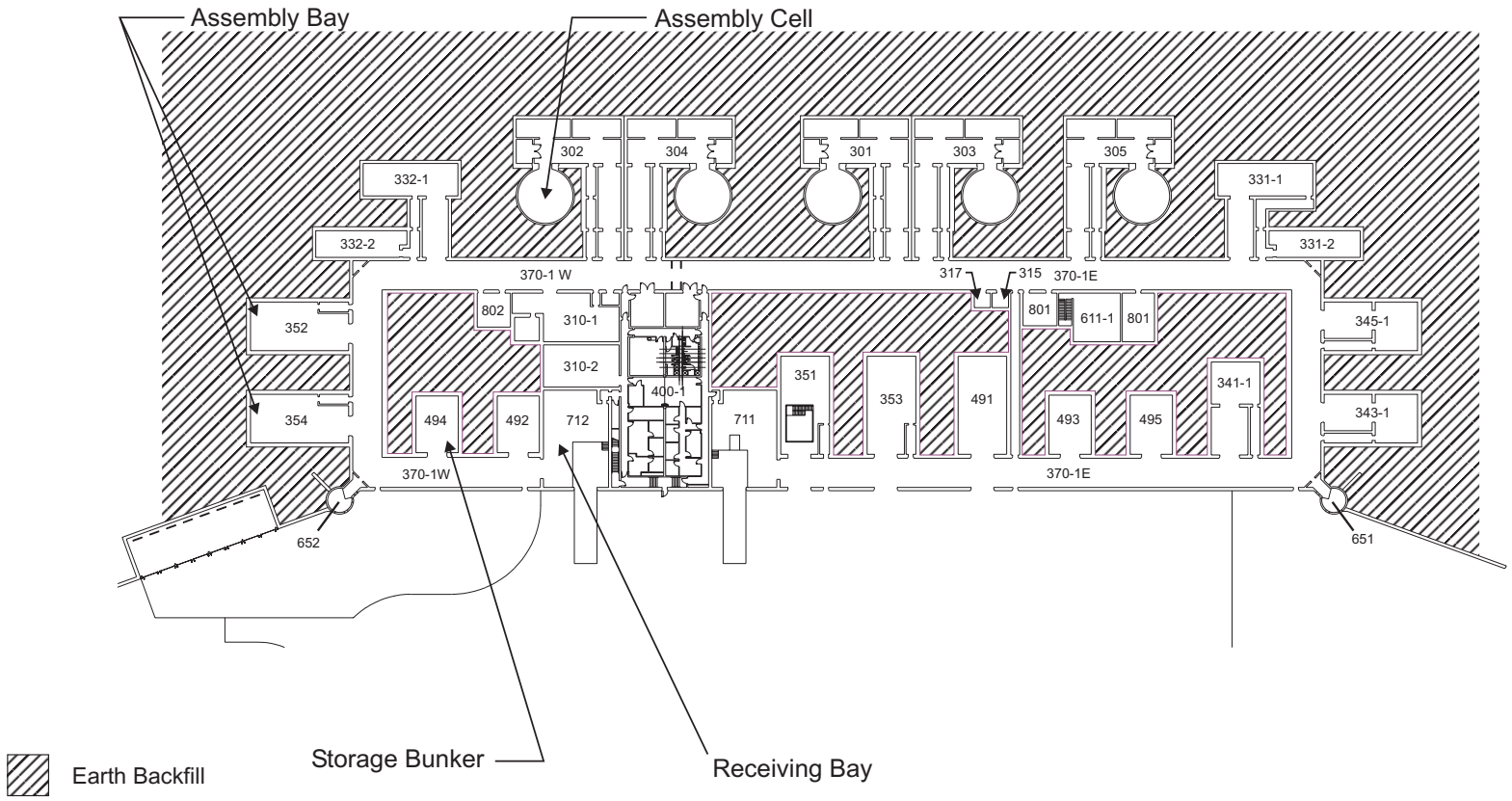

Figure 3–10 DAF Floor Plan

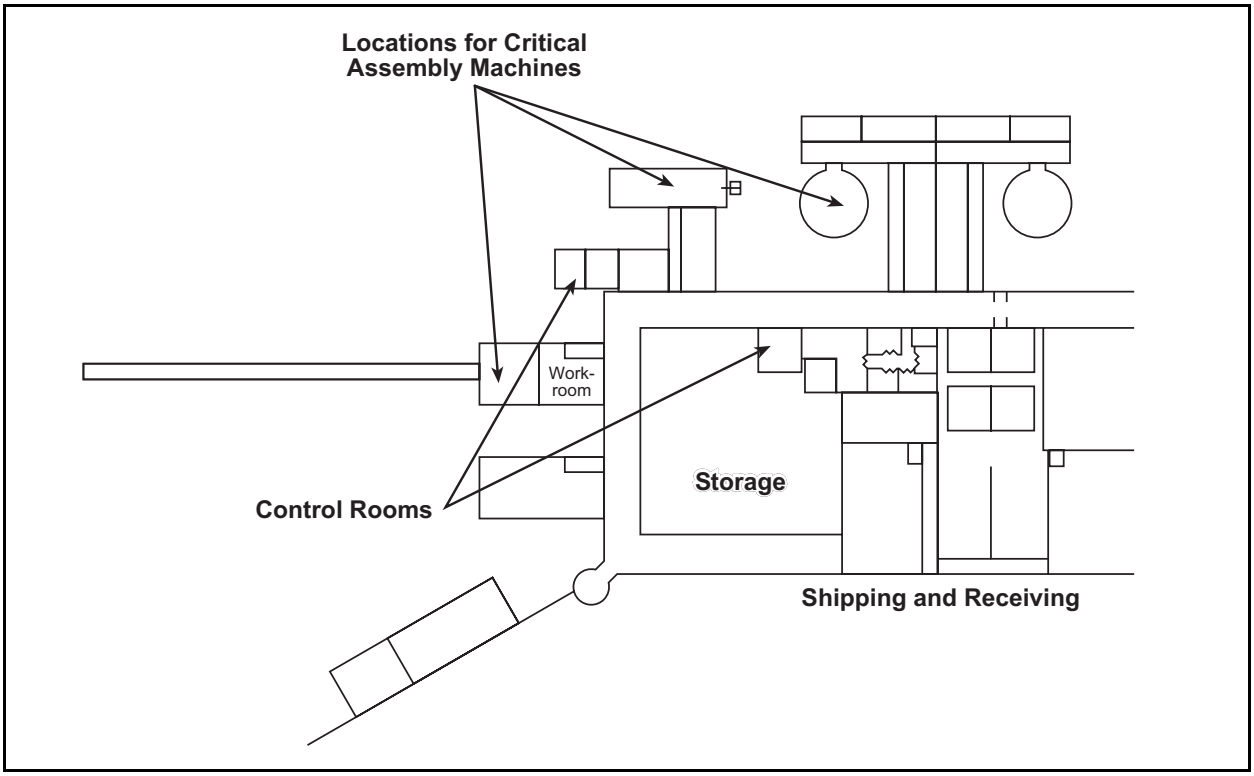

Figure 3–11 DAF Critical Assembly Layout

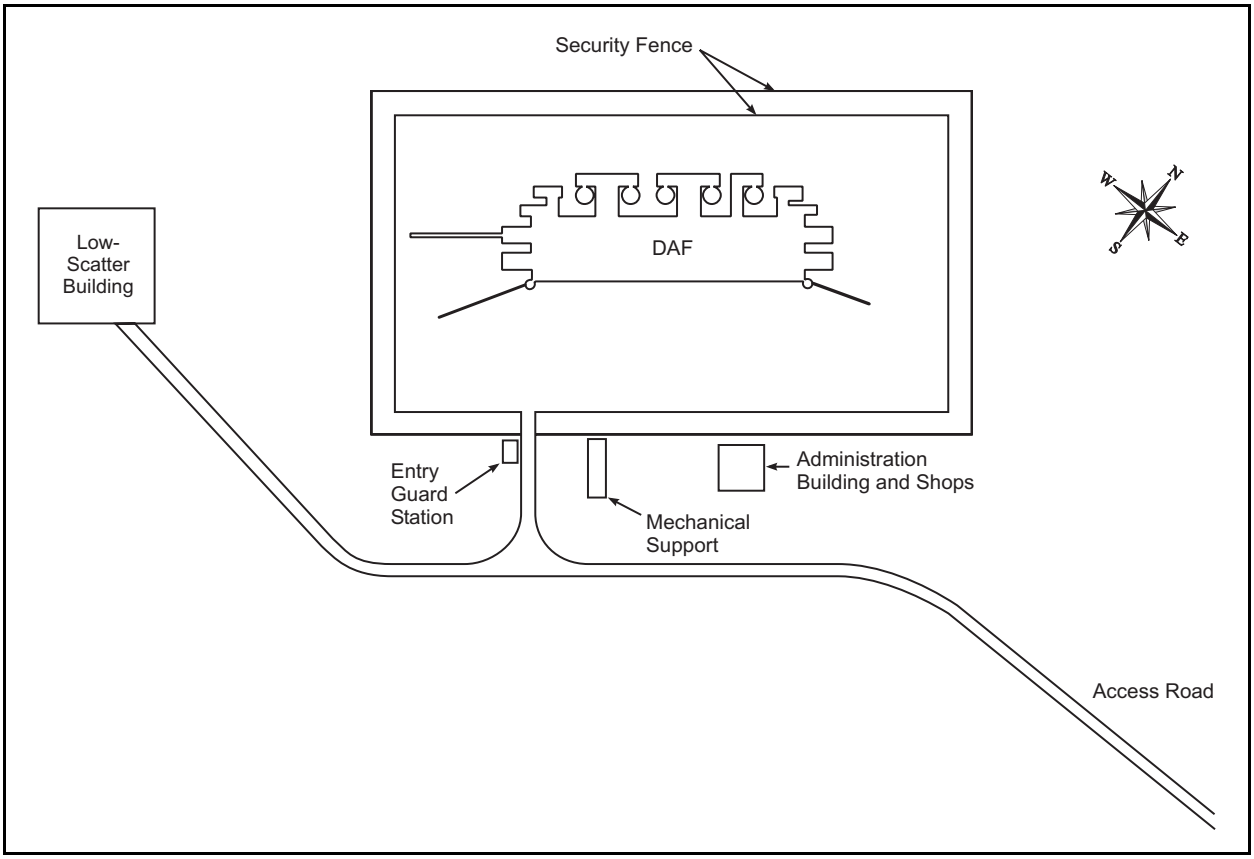

Figure 3–12 DAF Layout Site Vicinity

The TA-18 radiography function would be accommodated in the existing DAF radiography building.

New Administration Building

The personnel currently in Building 400 would be displaced to allow room for the DAF Central Control Station, Radiation Control Technician work area, Hot Work Laboratory, Document Control Center, and a screening entrance to the Material Accountability Area boundary. This displacement of personnel would require a new Administrative Building outside the PIDAS. The new 1,115-square-meter (12,000-square-foot) facility would house personnel, provide conference facilities, allow space for storage of materials, and house emergency response equipment.

3.3.5.2 Annual Operations

The operational characteristics of the facilities under the NTS Alternative, common to all alternatives, are provided in Section 3.2.

3.3.5.3 Construction Requirements

Table 3–8 shows the construction requirement parameters used in the environmental impacts analysis.

Table 3–8 Construction Requirements under the NTS Alternative

Requirement	*Quantity*
Electrical energy (megawatt hours)	16 [a]
Peak electrical demand (megawatts)	0.08
Concrete (cubic meters)	288
Steel (metric tons)	(b)
Fuel/gasoline (liters)	(b)
Water (liters)	3,980,000
Land (hectares)	3.64
Construction workers	
Total (during construction)	45
Peak	60
Construction time (months)	9

[a] Electric usage outside the DAF building.

[b] Not provided. Considered to be part of construction costs; contractors to provide steel for the construction and fuel/gasoline needed for their machinery.

Source: NTS 2001.

3.3.6 ANL-W Alternative

This alternative would involve the housing of TA-18 operational capabilities and materials associated with security Category I/II activities in buildings located at ANL-W. The facilities proposed for the relocation of security Category I/II activities are: FMF, with a proposed addition; the Zero Power Physics Reactor (ZPPR) facility; the Experimental Breeder Reactor II (EBR-II) containment and power plant; the Transient Reactor Test (TREAT) facility; and a new General-Purpose Experimental Building (GPEB) (ANL-W 2001). The site plan is shown in **Figure 3–13.** Under this alternative, a portion of the security Category III/IV activities (the SHEBA activities) would either be relocated to a new structure at LANL's TA-39 or remain at TA-18. The rest of the security Category III/IV activities would remain at TA-18. The relocation of SHEBA and other security Category III/IV activities to new structures at LANL is discussed in Section 5.6.

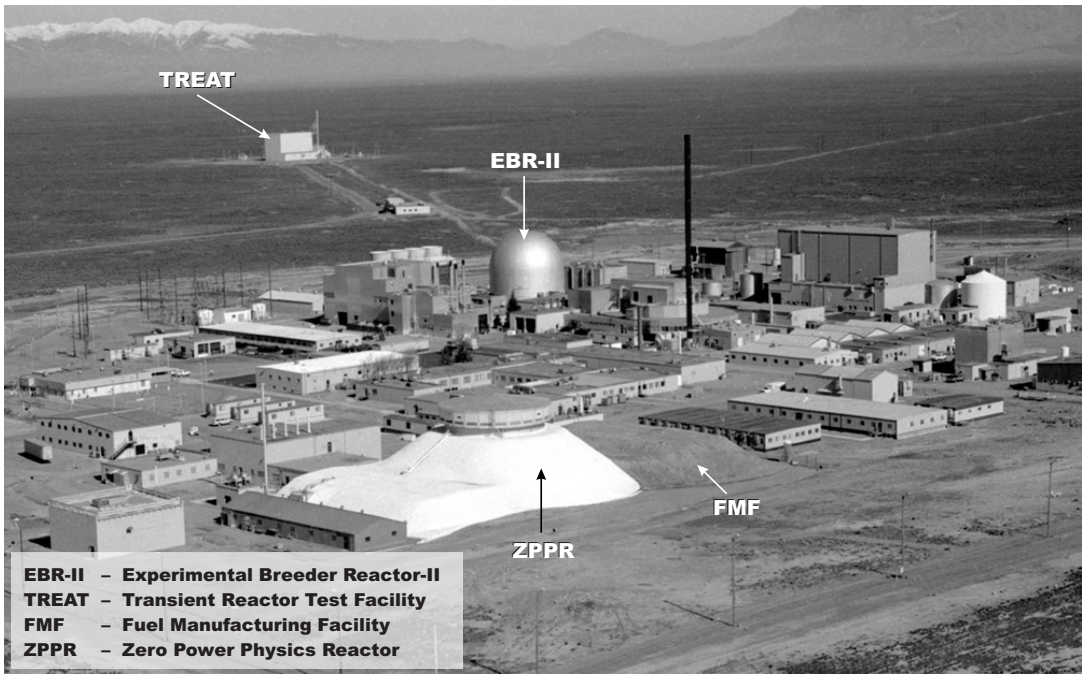

Figure 3–13 ANL-W Site

One critical assembly machine would be housed in the ZPPR cell with the control room collocated with the ZPPR control room. The control rooms would be located in the ZPPR support wing (Building 774), inside the protected area. Three other critical assemblies would be located in a new addition to FMF (Building 704). Control rooms would be located in the basement of the ZPPR support wing (Building 774), which is outside of the protected area (see **Figure 3–14**).

The EBR-II containment building would be used for radiography equipment. The truck lock located in the EBR-II power plant would be used for the emergency response staging area.

The low-scatter facility would be located on either the turbine floor of the EBR-II Power Plant (Building 768) or at the north end of the TREAT Reactor Building (Building 720).

Storage vault space requirements for security Category IB SNM would be provided in four different vaults within the protected area. Two of the vaults currently exist, while the other two would be constructed along with the new additions.

3.3.6.1 Facilities

Fuel Manufacturing Facility

FMF (Building 704) is located adjacent to the ZPPR facility (see **Figure 3–15**) and is covered with an earthen mound. FMF was used to manufacture fuel for EBR-II. The facility was completed in 1986 and was oversized for the EBR-II mission. The building includes a large SNM vault, an induction furnace, and gloveboxes and hoods, as well as other temporary experimental setups.